

Hardy Fern Foundation

NEWSLETTER

Editor Sue Olsen ■ VOLUME 4 NUMBER 3 ■ FALL 1994

President's report

Sylvia Duryee

The Hardy Fern Foundation held a very successful Fern Festival again in June. This is a great display and sale of some 100 plus species and varieties available for planting here. This sale originated as Sue Olsen's brain child some 20 years ago and was originally totally sponsored by the Northwest Horticultural Society. The last few years the HFF has helped with the effort. The result is a marvelous tool of education and has developed an awareness of ferns and fern culture among many gardeners and growers and some landscape planners. In addition to the sale we had an outstanding lecture by Dr. Carl Taylor on "Ferning in Japan with some Isoetes on the Side". We enjoyed his beautiful photographs as well as an introduction to the little known genus that is Carl's specialty. The Festival's tour was at the beautiful garden of Marshall Majors on Bainbridge Island. Visitors enjoyed seeing his fern collection as well as his magnificent specimen sized rhododendrons.

The Fern Festival idea is a marvelous project that could be taken on anywhere where there are a number of fern enthusiasts. Think on it and give it a try. If you are interested in more information or have comments - please write.

The Hardy Fern Foundation is now expecting to use a portion of one of the Rhododendron Species Botanical Garden's greenhouses for growing on young ferns and as a place to repot and hold

material for later availability to members, our satellite gardens and sales.

We have received two applications for satellite status - one from The University of Tennessee and the other from the Harry P. Leu Gardens in Orlando, Florida. Both have been accepted and we look forward to working with increasingly diverse areas in the U.S.

Just a reminder re: slugs. Our very dry summer slowed them down a bit - but I have put out beer bait again - the result is an unbelievable number of baby trouble makers that are no more!

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Volunteers needed

Once again the Hardy Fern Foundation will have a display booth at the Northwest Flower & Garden Show which runs from Feb. 22 to Feb. 26, 1995. We will be adjacent to the Rhododendron Species Botanical Garden display. We need help in staffing as it must be manned at all times. Volunteers who handle a four hour segment will receive free admission to this wonderful show. You'll also get to answer some interesting questions such as "which ferns have flowers"? Actually the time goes by very quickly and it is indeed an interesting experience. The show is the same weekend as the North American Rock Garden Society's Winter Study Weekend which will also take place in Seattle so here is an opportunity for members coming from outside the greater Seattle area to see the show as well as to meet some fellow members.

TO VOLUNTEER please write or call Janet Dalby, 3220 99th Ave. N.E., Bellevue, WA 98004 - phone (206) 454-3447. **THANKS!!!!**

"Nature made ferns for pure leaves to show what she could do in that line." *Thoreau*.

Caveat Emptor!

Catharine W. Guiles
New Gloucester, ME

For this article, rather than take a trip to a garden specializing in ferns or a location where they are known to thrive naturally, I "travelled" in the pages of the catalogues of four garden centers in Maine. Specifically, I thought it would be a useful exercise to see what ferns are for sale here and to determine as much as possible whether these offerings are appropriate for the climate of coastal Maine, the location of my own small fern garden.

Who, aside from myself, can benefit from such an inquiry? Others living in northern New England or Zone 4 immediately come to mind. For those in other parts of the country, the exercise will prove academic; however, I find that Maine friends occasionally ask me what ferns would be appropriate for their gardens, and I'm sure other readers receive such requests for advice. A knowledge of what is available in nearby garden centers can, I think, ensure that answers will be more informed. And if the reader wishes to follow in the footsteps of Ralph Nader, he or she can always point out in a loud voice to a garden center's owner that the Dryopteris watchamacallit plant for sale is a poor bet for the local climate!

And speaking of climate, what are we dealing with in Maine? My first thought was to identify the minimum temperature that an unprotected plant might have to face here. For an answer, I was fortunate to obtain data from the Maine State Climatologist, Dr. Bernard F. Dethier, who has also authored a booklet, The Climate of Maine. On January 19, 1971, the flora and fauna of Ellsworth, Maine, the town closest to my garden for which records are kept, experienced a record -28 degrees F! On February 2,

1962, the mercury plunged to the same level. These records would assign the location to Zone 3: however, they are extremes. The U.S.D.A. Hardiness Zone Map places Ellsworth in Zone 5, for which the average annual minimum temperature is -20 to -10 degrees. I personally shy away from any plant not recommended for Zone 4.

Two other weather factors affect the gardening situation here. Snowfall in coastal areas varies greatly from one year to another, thus making it impossible to rely on snow cover for winter protection. Mirroring this situation, rainfall in July and August averages only three inches per month on the coast, thus requiring the gardener to supply water during dry spells. Plants do benefit from coastal fogs, but sometimes the weather is just hot and muggy. The ferns native to Maine can withstand unprotected winter cold and intermittent summer dry spells; those imported from other parts of the United States or the world may not exhibit these qualities.

The four garden centers whose plant lists I studied are all in the southern half of the state, offer a large selection of perennials, and are of regional, even statewide reputation. Two offer mail-order services, and one of them advertises in nationally circulated garden publications. Rather than risk legal action by well-intentioned plantsmen who are not fern specialists, I have decided to identify them as A, B, C and D.

Garden Center A has the shortest list of ferns, ten to be exact. Of these, six are native to the state—e.g., Adiantum pedatum (Maidenhair fern), Osmunda cinnamomea (Cinnamon fern), and Matteuccia struthiopteris (Ostrich fern), and four are imports: Athyrium niponicum 'Pictum' (Japanese painted

fern); Dryopteris erythrosora (Autumn fern; Far East) and something called "D.. pseudo mas 'Crispa'" which is the former name of the present day Dryopteris affinis 'Crispa' with Britain as its home territory. A. niponicum 'Pictum' grows beautifully in my garden; D. erythrosora did not. Garden Center A is to be commended for noting that this fern might be used as a houseplant.

Garden Center B offers 18 ferns, of which 14 are native. They make a point of saying that all the plants, with a few noted exceptions, are hardy to Zone 4, and their foreign offerings are the same as those of Garden Center A. Rather than suggest D. erythrosora for houseplant use, they assign it to Zone 5. D. ps:eudomas 'Crispa' is here called the Crested male fern. Unlike Garden Center A, they do offer one native plant that requires alkaline conditions, Cystopteris bulbifera (Bulblet bladder fern). I have grown this plant in two locations by mixing marble chips into the soil; this simple modification seems to make it happy.

Garden Centers C and D, sell a larger, more adventurous selection of ferns. Garden Center C puts out a special mail-order catalogue devoted solely to native wild flowers and ferns. As much as I have enjoyed doing business with this firm, I regret to note that they do not specify that their plants are propagated in a nursery.

Their offerings—28 species—can be divided into those native ferns which are very common and easy to grow, such as Athyrium filix-femina (Lady fern) and Dryopteris marginalis (Marginal wood fern), and those which are difficult to impossible. In the "difficult" category are such ferns as Asplenium platyneuron (Ebony spleenwort), the lime-lover A. trichomanes (Maidenhair spleenwort),

and *Camptosorus rhizophyllus* (Walking fern). Readers of my piece "The Contest and A Contest", in the Spring 1994 issue of this newsletter, might recall that the highly experienced staff of The Wild Gardens of Acadia, in Acadia National Park, were having trouble keeping *A. trichomanes* alive. Garden Center C offers another fern, *Botrychium virginianum* (Rattlesnake fern), which the Wild Garden staff have not even attempted to include in their collection, even though it has been found on Mount Desert Island. Their decision is understandable. Of this and related species, John Mickel writes, in Ferns for American Gardens: "Transplants often live for a year or two or three, diminishing in size each year and then dying. Transplants are rarely successful, and any such action should not be accompanied by great expectation." He also notes, "slugs love them" (p. 129).

Garden Center D has a selection of 44 ferns, 21 of which are native to the state. The rest are a highly cosmopolitan selection, offering ferns originating both in states other than Maine and in foreign countries. It would be wonderful if *Polystichum munitum*, the western sword fern, were hardy on the Maine coast, as D's catalogue says it is, but in my experience and, more to the point, according to Mickel's recommendation, it is not. This establishment also offers *P. makinoi* (Makino's holly fern), *P. polyblepharum* (Japanese tassel fern), *P. rigens*, *P. tsus-simense* (Korean rock fern — all four from Japan and other far-eastern countries) — and three cultivars of *P. setiferum* (Europe). Such evergreen ferns from other, more consistently humid parts of the world, I have learned, can succumb to dessication in a different type of climate.

Among the four garden centers, establishment D is also the only source of

Phyllitis scolopendrium (Hart's tongue fern), in this case a cultivar "Laceratum" (possibly the same as Mickel's 'Kaye's lacerate', an English plant). Mickel assigns this fern to Zone 5; count me as one who failed with it. Interestingly, they also offer *Aspleniosorus ebenoides* (Scott's spleenwort).

The reader may ask at this point why I don't include something in this article on the plant sources of these four garden centers? In the case of Garden Center C, it is not for want of trying. Approximately a year ago I ordered some plants by mail from this company, and as they came directly from the supplier, they carried their address, which was in New Hampshire. An inquiry by mail has not yet brought a reply, and a wish to remain in Editor Olsen's good graces by complying with her deadline keeps me from pursuing this line of inquiry further. Perhaps it can be a topic for another article.

Two of these garden centers list in their catalogues the plant societies of which they are members. The state organizations include the Maine Christmas Tree Association, the Maine Landscape and Nursery Association and the Maine Rose Society; there is one regional one, the New England Nurserymen's Association. One is also a member of the American Association of Nurserymen, and the other, the Perennial Plant Association, the American Horticultural Society, the American Rock Garden Society, the American Rose Society, the Alpine Garden Society, the Royal Horticultural Society and the Scottish Rock Garden Society! When the Hardy Fern Foundation was founded, I tried to interest the owner of Garden Center D in a membership; however, he said that he was already the member of enough organizations. Perhaps foundation members can be more

persuasive with the management of other such business.

Thus, there are four garden centers with three "philosophies" among them as far as ferns are concerned. Two present a limited but largely reliable choice of plants for this climate. A third has a larger selection of species found in Maine and northern New England. A fourth, much more adventurous, offers the reliable local species plus a large selection of exotic species, many of which, I believe, would need special attention in order to grow well here. Very likely most customers shrug off plant failures as something one has to put up with in this climate. Such failures are not necessary; there are many ferns, both deciduous and evergreen, that do well here and continue to look beautiful into the fall. One does not have to put up with the weedy appearance that others take on as summer wanes.

As mentioned, I hope this "field trip" into the pages of garden center catalogues encourages other members to survey the offerings of their local garden centers. Perhaps they will find an overlooked treasure; perhaps they will find plants that would be happier elsewhere!

Literature consulted

Dethier, B. E. The Climate of Maine. Maine State Climate Office and Northeast Regional Climate Center. Also minimum temperature chart for Ellsworth, Maine, for the period 1948-1992.

Mickel, John. 1994. Ferns for American Gardens. New York: Macmillan Publishing Company.

Fern Collecting Experiences in Mexico

Dr. Irving W. Knobloch, East Lansing, Michigan

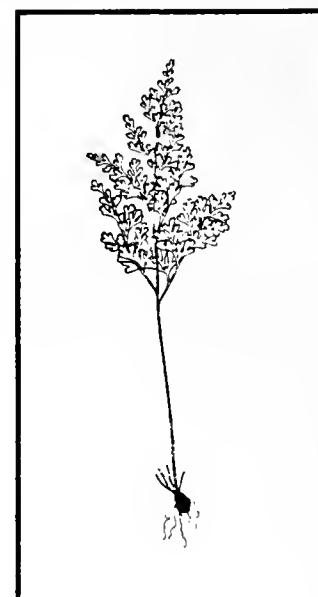
(Dr. Irving Knobloch, who is known to many of us as co-author of Ferns and Fern Allies of Chihuahua, was a participant in a Trinidad Fern Foray led by Dr. John Mickel in 1985. One evening, when we were without electricity, he delighted the group with a candlelight talk reminiscing on his mining and plant collecting experiences in Mexico in the 1930's. He has graciously agreed to share some of his adventures with our Horticulture Northwest readers....Sue Olsen.) From Horticulture Northwest Volume 13, Number 2, Summer 1986 - reprinted with permission.

I have been a member of the American Fern Society for many years and was interested in ferns before that time. Ferns were always a hobby with me and I pursued these beautiful "creatures", even though I was essentially a plant anatomist by training. Why not study the anatomy of ferns then, the thought occurred to me, and this I did. To do a creditable job, I was forced to delve into fern taxonomy and cytology, because research on mis-named plants is of no use to anyone.

There is only so much time available to one and I was forced to concentrate on native ferns, but how I envy those of you who can name the hundreds of species and cultivars in *Adiantum* or *Nephrolepis*. To come back to collecting, many of you have ventured south in search of native ferns and know the difficulties in "bringing them back alive". I do not know how many fern collectors have ventured into Mexico,

but my book on the Plant Collectors of Mexico, published in 1983, lists over 4,000 personal names. The purpose of my collections was centered around the publication of a book called Ferns and Fern Allies of Chihuahua, which I did with the late Dr. Donovan Correll. Of course, I gathered specimens in many other states, such as Nuevo Leon where, among others, one new species was found and a very rare *Pellaea* was rediscovered.

The idea that Chihuahua is one vast desert will bring a laugh to those of you who have taken the railroad that starts at either Chihuahua City or Los Mochis and goes through some very mountainous areas, well-forested and containing some of the largest canyons in North America. Although the forested areas of Mexico contain the largest number of fern taxa, yet even in the drier parts, one finds abundant species of *Cheilanthes*, *Notholaena*, *Pellaea*, and *Selaginella*, especially if one looks on the north side



Anogramma leptophylla

of rocks (which usually have some moisture at their base).

Our experiences in Mexico started in 1937 when I visited my wife's family at a silver mine locale known as Mojarrachic. So intrigued was I with the scenery and ferns, that I returned in 1938 to work at the mine and stayed there until 1940. After gaining my Ph.D. in 1942, I returned a number of times with grant assistance to collect material for the aforementioned book. In the 1930's neither the railroad nor the roads were as they are today. We would start from the city of Chihuahua and get off the train at San Juanito, some 230 miles distant, dead tired after the 12 to 14 hour ride. We arrived after dark and, without flashlights, were led to some sort of boarding house. It was pitch dark and we were trembling. After a meal of questionable character, we boarded a truck which lurched us the rest of the way to the mine, only 30 miles, but 8 hours of torture. As you might surmise, the road was 70 percent rocks and 30 percent rivers. It was not a rare occasion to have to sleep in a cave on one side of the river until about 11 o'clock the next morning, when the truck could cross.



Dr. Irving W. Knobloch

My fern collecting had to be confined to weekends, because I had to oversee the office, check the payroll, and of course, descend into the mine each day clad in a pair of shorts and bearing a miner's lamp on my forehead. This aspect was quite dangerous because the bucket sometimes broke its moorings and you took a chance that you were not in it at such a time. Our food was cooked on a wood stove and our inside toilets were outside. When the Mexican Hat Dance struck, all we had was Enterovioforme. The super stopper, Lomatil, had not yet been compounded. We had running water of a sort. Outside the kitchen was a 50 gallon drum and a pipe led into the kitchen and a faucet was attached. Every day, our handy man went up the arroyo and dipped some ice cold water out of a spring on the hillside. This he dumped into the drum and — voila. One day I inspected the drum and found ten or twelve salamander larvae swimming briskly about in the drinking water. Fortunately, I collected them and they turned out to be a new species!

We had about 300 chickens, 2 ducks, 2 turkeys, 2 horses, and 2 peacocks; later we added a fine goat from which we extracted milk every day. Hawks found our chicken yard a veritable paradise. I could train a shotgun on a tethered chick, watch the hawk circle in, pull the trigger and — the chick was far away in the talons of the hawk. Worked every time!

Ferns and allies were everywhere there in the mountains; not tree ferns, but lesser taxa. Every weekend found us in the saddle in a different part of the area. The soil in which the ferns grew was volcanic in origin and very rich in minerals. Few grew far away from rocks, of which there were plenty.

Since there were no stores in our vicinity, we had most of our food ordered from

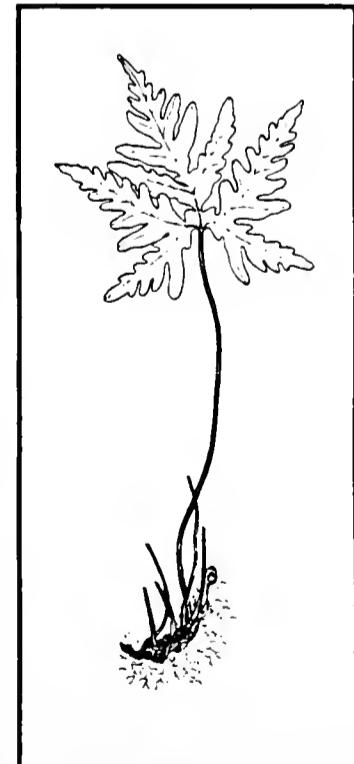
Chihuahua City, about 260 miles and 2 days away. With this food came a newspaper which, after reading by the family, became mine. Being without blotters, corrugates and newspapers is not the proper way to preserve plants, so we ordered a bundle of old newspapers each week. However, most of my specimens were acceptable despite these drawbacks. On NSF-financed trips I was better prepared and I traveled to many places in Chihuahua such as Batopilas where the



*Cheilanthes
mexicana*

very delicate *Asplenium modestum* from the vicinity of Batopilas has been found only once (by Palmer) and I could not locate it when I was in Batopilas. (*There will be more on this in an article about Christopher Fraser-Jenkins in a future newsletter.....Ed.*) I was thrilled to collect *Asplenium adiantum-nigrum* as it is rarely collected and is cospecific with plants in Eurasia and Africa. *A. exiguum* is also interesting in that it is also found in northern India and northern China. I would think that *A. exiguum*, *A. monanthes*, *A. trichomanes*, and *A. resiliens* might make good terrarium plants.

Of the 14 species of Selaginella in the state, the best known is *S. lepidophylla*, which curls up when dry and is widely sold. Being without roots, I wonder if these commercial plants are really alive? Dr. Correll first found two filmy ferns in a remote area; one was a *Hymenophyllum*, and the other a *Trichomanes*, rare finds indeed. He also located *Blechnum stoloniferum*, *Dennstaedtia distenta*, *Anogramma leptophylla*, *Bommeria subpaleacea*, *Pellaea longimucronata*,



*Bommeria
Knoblochii*

famous Dr. Palmer had been in 1885, to Mount Mohinora, the highest peak, two trips to the bottom of the Barranca del Cobre, one to the town of Urique at the bottom of the Barranca Urique, one to the Barranca Guerachic, and other places too numerous to mention.

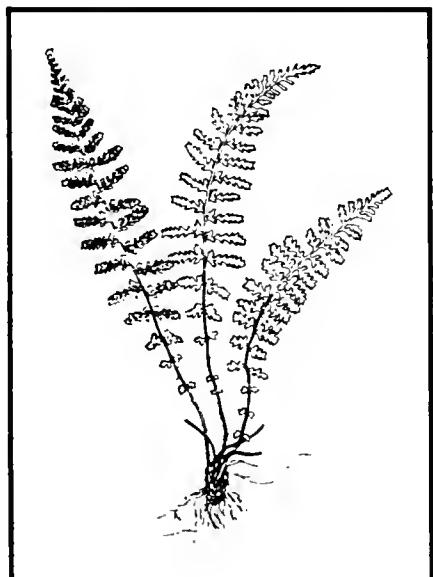
The book on Chihuahua pteridophytes, by Dr. Correll and myself, contains descriptions of 138 species, subspecies and varieties, as well as line drawings and keys. A few taxa have since been added and some names have been changed. About seven species are endemic and several of these were hard to relocate. A

Cheilanthes cucullata, *C. mexicana*, *C. wootonii* and *C. weatherbiana*.

Some may be intrigued to learn that many of the *Cheilanthes* species are triploid apomicts. This means that they have a chromosome number between that of a diploid and a tetraploid. Furthermore, they have functional sperms, but no archegonia and, thus, no eggs. The sporophyte arising from the prothallus is not sexually produced, but grows from the body of the prothallus itself. In xerophytic or dry

heart of the Barranca country, boarding at either Chihuahua City or Los Mochis, and getting off at Divisadero, staying at the hotel there, and spending a day or two walking around. You will find some ferns there, and also see the awesome Barranca Urique with the Barranca del Cobre just at the far edge. You may have to make hotel reservations. Get a prescription for Lomatil (stopper) and Ducolax (starter), iodine the water or drink beer and take a large bag of snacks with you. You cannot drive to the Divisadero, I am told. You will see Tarahumare Indians there, and also at the next town north known as Creel. Creel also has a hotel or two, and you will find ferns there if you walk out of town in several directions. Good luck!

Illustrations are from Ferns and Fern Allies of Chihuahua. Texas Research Foundation 1962.

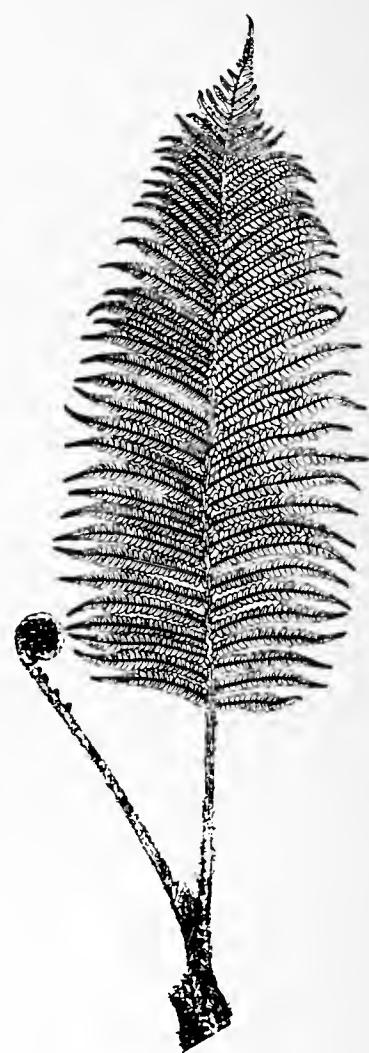


*Asplenium
exiguum*

areas, this method of reproduction is necessary because the films of water necessary for the sperm to swim to an egg are lacking (or rare).

I trust that I have given you some idea of what conditions were like in the 1930's, and have given you an appreciation of the pleasures and perils of collecting in northern Mexico. I must warn you that some places I visited are too dangerous, because drug plants are now grown there (opium and marijuana). It is always good to get all the information you need before you start out, such as gas, food and sleeping availability. To get the feel, one might take the train that goes through the

Dr. Knobloch received his Ph.D. from Iowa State University and has published 141 papers and books in all including the description of a new sp. of *Cheilanthes* i.e. *chipinquensis*; located a triploid backcross specimen of *Pellaea wrightiana* with both its parents visible on one leaf (upper part *ternifolia* and lower part now called *truncata*) also located *Cheilanthes castanea* in Virginia in his words "a long way from home". He compiled Readings in Biological Science and two works on Mexican Plant Collectors. He retired from Michigan State University in 1976 after 31 1/2 years and is now a volunteer at the E. Lansing Senior Center and the Michigan State University botanical greenhouse and butterfly room which he is in charge of propagation and naming of about 150 taxa of ferns and allies. He has recently published an excellent book Livable Planets are Hard to Find to be reviewed in an upcoming newsletter.



The Hardy Fern Foundation Newsletter is published quarterly. No portion of this newsletter should be reprinted without permission from the editor. Manuscripts and contributions are welcome. It is helpful to have articles on a PC disk but all material is very welcome including articles scribbled on the backs of envelopes. Pictures and drawings enrich the newsletter and are most welcome. Please send to Sue Olsen, Editor, 2003 128th Ave. S.E., Bellevue, WA 98005.

Adiantum Venustum

Evergreen maidenhair
James Horrocks
Salt Lake City, UT

Adiantum: (Greek) "not wettable"
venustum: (Latin) "Lovely or handsome"

This elegant little fern is unique among cold-hardy maidenhairs in having fronds that remain evergreen if covered with snow before freezing weather. Otherwise, the fronds are deciduous if left exposed. *Ed.'s note.* *The fern is evergreen in our Zone 7/8 Pacific Northwest.* This fern is native throughout the Himalayas from Kashmir to China. It is not native to Canada as has been erroneously reported. It frequents moist humus-rich soils on mountain slopes and alpine meadows, having a rather spreading habit, and often festooning the forest floor as a very attractive ground cover. It is certainly more adventurous than other cold-hardy maidenhairs.

This species could be mistaken for *A. capillus-veneris*, although *A. venustum* has narrower pinnules and a bluer cast to mature fronds. It is sometimes confused with *A. monochlamys* from Japan, but the latter has somewhat glossier, narrower fronds with more rounded pinnules, and is more well-behaved, not tending to spread as does *A. venustum*. Rush reports of two species in China, *A. davidi* and *A. smithianum*, that appear similar to *A. venustum*.

Description: The rhizome creeps along the soil surface or slightly below it, branching frequently and rooting beneath. It is approximately 1/8 inch thick, occasionally thicker, densely covered with chaffy light brown scales, particularly on the younger parts. The stipe is about as long as the blade, scaly at the base but

smooth and shiny above, the color dark brown to almost black. The blade above is triangular-ovate in outline. The entire frond is usually from six to twelve inches in length, although the author has encountered numerous fronds in the garden 18 inches long! The fronds are tripinnate to quadripinnate and decumbent. The old fronds remain attached until some time after the new growth appears. The pinnae are alternating and bipinnate. The pinnules are cuneate at the base, rounded at the apex and slightly cleft. New fronds are a rosy bright green con-

Culture: This fern can be rather difficult to establish. Kaye advises not burying the rhizome too deeply. It should be planted flush with the soil surface and allowed to find its own depth. Once established, this maidenhair can spread into a sizeable colony, so it should be given ample room. In my garden, one humble little planting has spread in about 8 years to an area of about 9 square feet. It can be a bit invasive, but because of its durable beauty, I have allowed it to wander anywhere it wishes. It is a much sturdier plant in hot dry weather than its

northern relatives, *A. pedatum* and *A. aleuticum*. The soil should be rich in organic matter and never allowed to dry out. It does not seem to be particular about soil pH. Growing it from spore can be troublesome, as it can yield either a generous number of sporelings, or, at other times, merely a generous number of prothalli. It is invaluable as a slow spreading ground cover and is easily tolerated by larger ferns which do not seem to mind being cozy with it. It is particularly lovely growing among large rocks. This is a maidenhair that is definitely worth having in the garden and is very cold hardy. My colony has survived winter temperatures of between -20 and -30 F. with very little snow cover. It is a charming contribution and a sturdy one at that for any shady area and well worth a try.



Adiantum venustum in the author's garden. Photo by Kim Durrant, Salt Lake City.

trasting beautifully with older mature fronds which have a somewhat blue-green cast. New fronds are produced at intervals throughout the summer. The sori are produced in slight hollows at the pinnule apices, usually one to three present, and protected by the curled edge of the pinnule apex. There is no true indusium.

References:

Hardy Ferns, 1968 Reginald Kaye, Faber & Faber LTD, London

Ferns, 1974, R. Grounds, Pelham Books LTD, London

A Guide to Hardy Ferns, 1984 Richard Rush, British Pteridological Society, London

Ferns for American Gardens

by John Mickel. Macmillan, New York. Pp. xii, 370. Numerous line drawings and more than 360 colour photographs. 1994.

It is amazing to think an all round pteridologist - author of so many botanical fern floras and successful editor of the Fiddlehead Forum can also write books on ferns for gardeners. I think this is John Mickel's second gardening book, and what a book it is!

It is top quality and deserves a comprehensive review. Over 360 colour photographs immediately put it into the same category as David Jones's Fern Encyclopaedia - but the BIG difference is this book is primarily, but not entirely, written to help gardeners in colder temperate regions. The author's location at New York sees to that!

Essentially the book follows a fairly predictable format, the scene setting is good with photographs from Barnstaple in the UK particularly appropriate to me as an Englishman. The account of fern structure coming from a botanist is bound to be correct and I suspect we can all learn something here - I have never distinguished between bipinnatifid and pinnate-pinnatifid - perhaps I will now have to reform! There is a useful account of fern variation which left me with a few queries - why is 'frond division' categorised under 'forking'? Perhaps this is a typographical error. Why also is the plumose form of Hart's Tongue described as incised or lacerated when the crispum form is usually understood as the plumose form?

General details of how to propagate and grow ferns in the garden are comprehen-

sive and accompanied by beautiful photographs plus a list of complementary flowering plants for mixed planting.

The main body of the book gives an encyclopaedic account of hardy ferns which is an absolute mine of information. It represents a terrific improvement over the previously available literature. Each species is accompanied by details of size, growth form, commercial availability, hardiness and ease of cultivation. This is followed by descriptions and miscellaneous interesting facts and accounts of principal cultivars. Many species and cultivars are illustrated in colour. The photographs are beautiful although some have suffered from reduction to just 4.5 X 6.0 cm or 6.0 X 7.0 cm.

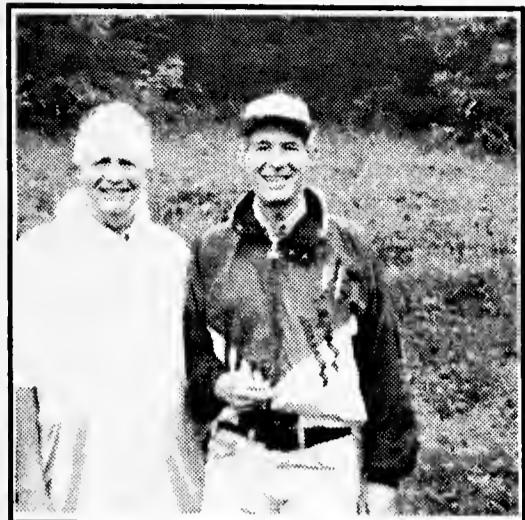
In large genera a wonderful range of species are described, eg. in Polystichum 38 species and hybrids are included. Many species are illustrated, but not all. It would have helped immensely if silhouettes of each taxa could have been included to allow certain differentiation between difficult pairs of species. Perhaps inevitably in a book of this size some photographs do not look like typical examples of a given fern. For example, Polystichum x lonchitiforme shows a crested form, something I've never seen before, unless this is the plant in Reginald Kaye's garden? The closely related P. illyricum is also odd, looking to me more like a narrow form of P. setiferum or P. aculeatum. Elsewhere, the close up of a pinna labelled Adiantum capillus-veneris is probably A. raddianum. In A. capillus-veneris the indusium is not circular as shown but runs straight along the margin of the pinnule.

What wonderful cultivars you have in North America. Polystichum munitum 'Cristatum', P. acrostichoides 'Cristatum' and P.a. 'Multifidum' (surely 'Serratum' or 'Binnatifidum' would

have been more appropriate names?) all shout out to be grown more widely. I cannot help but wonder what other treasures are secreted among ferns collections in the USA! In general the nomenclature of the British cultivars is very much in accord with thinking in Britain. It is particularly pleasing to see Jimmy Dyce's work on Polystichum being taken up and used in the States. I am also secretly pleased to see the International Code for the Nomenclature of Cultivated Plants being ignored from time to time! Unfortunately the occasional photograph of a cultivar is questionable, eg. the photograph of Thelypteris (Oreopteris?) limbosperma is in fact a cultivar in the 'Angustifrons group' - I know because this was photographed in my garden! I am slightly unhappy about one or two other photographs, Polystichum setiferum 'Rotundatum' in its best form is bipinnate, not tripinnate as shown. P. setiferum 'Percristatum' does not show the percristate character (a silhouette would have been better), also does Phyllitis scolopendrium 'Crispa Golden Moly' equal 'Speciosum'? It looks like it to me. Finally on this subject why are some cultivars illustrated not mentioned in the text? eg. in Polystichum setiferum 'Plumosum Green', 'Plumosum multilobum', 'Ramulosum' and 'Cristatum Pinnulum' (or 'Cristato-pinnulum').

For sometime different schools of thought have argued the pros and cons of putting the Hart's Tongue Fern in Asplenium or Phyllitis. It always seemed an irrelevant diversion to me and to be honest I couldn't have cared less! However, now that the author here has plumped for Phyllitis it has highlighted a problem which I had overlooked. The gender of the latin Phyllitis is different from Asplenium and all cultivar endings must agree and there-
continued on page 15

In Memory of James W. Horne III



L-R. The late James Horne & Alan Smith. Knoxville, 1994.

I am very, very sorry to report that Jim Horne died of a heart attack on September 24, while vacationing in Scotland. Jim was a wonderful friend with a delightful sense of humor. I will miss his keen but gentle observations on people and places as well as his infectious enthusiasm for all of his many activities. Jim was a retired teacher and was an active volunteer at Sentara Hampton General Hospital where he was beloved by all who knew him. He was also an active member of the Hardy Fern Foundation and had recently been appointed board member at large. He contributed to the newsletter and had a manuscript in preparation at the time of his death. As the list below will attest, he was an avid fern gardener and was also very faithful about submitting member's garden evaluations. In his memory and as a tribute to him we are printing his evaluation of the ferns in his Hampton, Virginia garden, USDA Zone 8.

Fern Name '92 '93

<i>Adiantum aleuticum</i>	5	4	<i>Dryopteris affinis 'Crispa'</i>	3	4	<i>Polystichum braunii</i>	4	5
<i>Adiantum capillus-veneris</i>	5	5	<i>Dryopteris carthusiana</i>	4	5	<i>Polystichum munitum</i>	4	1
<i>Adiantum pedatum</i>	5	4	<i>Dryopteris cycadina</i>	5	5	<i>Polystichum polyblepharum</i>	5	5
<i>Adiantum venustum</i>	5	4	<i>Dryopteris dilatata 'Recurvata'</i>	5		<i>Polystichum setiferum</i>	5	5
<i>Aleuropteris argentea</i>	4		<i>Dryopteris dilatata 'Jimmy Dyce'</i>	5		<i>Polystichum tsus-simense</i>	5	4
<i>Arachniodes simplicior v. variegata</i>	5	4	<i>Dryopteris erythrosora</i>	4	5	<i>Pteridium aquilinum</i>	4	5
<i>Asplenium pinnatifidum</i>	2		<i>Dryopteris filix-mas</i>	3	5	(A little humor here?....Ed.)		
<i>Asplenium platyneuron</i>	3	5	<i>Dryopteris filix-mas 'Bamesii'</i>	3	5	<i>Pteris cretica 'Albo-lineata'</i>	5	4
<i>Asplenium trichomanes</i>	4	4	<i>Dryopteris filix-mas 'Undulata robusta'</i>	4		<i>Pteris multifida</i>		5
<i>Aspleniosorus x ebenoides</i>	5		<i>Dryopteris goldiana</i>	4	3	<i>Pteris vittata</i>	4	5
<i>Athyrium filix-femina 'Angustum'</i>	5	5	<i>Dryopteris ludoviciana</i>	4	5	<i>Rumohra adiantiformis</i>	5	5
<i>Athyrium f-f 'Asplenoides'</i>	5	5	<i>Dryopteris marginalis</i>	3	5	<i>Thelypteris dentata</i>	4	5
<i>Athyrium niponicum v. 'Pictum'</i>	5	5	<i>Dryopteris wallichiana</i>	4	5	<i>Thelypteris kunthii</i>	4	5
<i>Athyrium otophorum</i>	4	4	<i>Gymnocarpium dryopteris 'Plumosum'</i>	5		<i>Thelypteris novaboracensis</i>	4	5
<i>Athyrium thelypteroides</i>	3	5	<i>Lorinseria areolata</i>	3	5	<i>Thelypteris palustris</i>	3	5
<i>Blechnum penna-marina</i>	4		<i>Lygodium japonicum</i>	5	5	<i>Thelypteris torresiana</i>	4	5
<i>Blechnum spicant</i>	5	4	<i>Matteuccia struthiopteris</i>	5	4	<i>Woodwardia fimbriata</i>	4	4
<i>Blechnum spicant 'Crispa'</i>	5		<i>Nephrolepis exaltata 'Bostoniensis'</i>	1		<i>Woodwardia japonica</i>		5
<i>Botrychium biternatum</i>	3	4	<i>Onoclea sensibilis</i>	3	5	<i>Woodwardia virginica</i>	5	5
<i>Botrychium dissectum</i>	3	4	<i>Osmunda cinnamomea</i>	5	5			
<i>Botrychium virginianum</i>	3		<i>Osmunda claytoniana</i>	5	4			
<i>Camptosorus rhizophyllus</i>	3		<i>Osmunda japonica</i>		4			
<i>Cheilanthes lanosa</i>	4	4	<i>Osmunda regalis</i>	5	5			
<i>Cheilanthes tomentosa</i>	5		<i>Pellaea atropurpurea</i>	5	4			
<i>Cyrtomium falcatum</i>	5	5	<i>Pellaea viridis</i>		4			
<i>Cyrtomium macrophyllum</i>	3	5	<i>Phegopteris decursive-pinnata</i>	4	4			
<i>Cystopteris bulbifera</i>	3		<i>Phegopteris hexagonoptera</i>	5	5			
<i>Dennstaedtia punctilobula</i>	4	5	<i>Phyllitis scolopendrium</i>	4	4			
<i>Dicksonia antarctica</i>	4		<i>Polypodium glycyrrhiza</i>		3			
(Did not survive winter '94....Ed.)			<i>Polypodium polypodioides</i>	5	5			
<i>Diplazium pycnocarpon</i>	5		<i>Polypodium virginianum</i>		5			
<i>Doodia media</i>	5		<i>Polystichum acrostichoides</i>	5	4			



The 1995 HFF Spore Exchange

As you can see the Spore Exchange is coming out earlier this year and there have been a few changes. There are 7 new columns. The first new column is the COMMON NAME no explanation necessary here.

Next is the PACKET column, it shows how many packets we have in stock at the time the list was published. This should key possible donors. If you see one that is running low, that you have, please send it in.

The ZONE is next. The zone listed is the most northern zone the fern has been reported to grow in. If I had no information on where the fern grows I put zone 9.

The next new column is the SIZE, this is the largest size that the fern can be expected to grow under ideal conditions. Ordinarily your fern will be smaller.

GROWING conditions is the next column in. There is a different letter for each condition listed that the fern prefers for growth.

A=ALKALINE SOIL, Z=ACID SOIL, S=SHADE, T=PART SUN, U=UNLIMITED SUN, D=DRY SOIL, N=NORMAL DAMPNESS for a fern, W=WET, H=HIGH HUMIDITY, E=EASY to grow, Q=DIFFICULT to grow, L=SILICATE SPECIFIC (need special fungi etc to grow,) R=ROCKY SOIL, J=EPIPHYTIC, B=TREE FERN C=CLIMBER, G=SPREADING HABITS.

Then COLLECTION site is where the spore donation was collected if it was collected in the wild. When ordering spores from the wild you must spell out the site that you would like them to come from, otherwise you will receive whatever packet of spore is on top at that time.

The next column is the ORIGIN this is the natural range of the fern.

The DONOR column lists the donors of the various spores. It is listed with the year the spore was donated beginning with the most recent; then the donor number. There will be a space between successive years. If you want spore from a specific donor you must specify whose you want.

There are also numbers listed in with the genus that impart the following information. 1=RARE, 2=NEW never listed before, 3=FEW spores in the donation, maybe too few to grow, 4=BOTANICAL Garden donation available upon request, \$=GREEN SPORES, \$\$ GREEN SPORES with a fresh spore donor available. We are, by the way, still looking for more green spore donors. If you want to volunteer please make it known when you make your requests or donations.

The information in the list should be taken as advisory in nature only, not as proven fact. If any member has any reliable information that should be added to, or changed in, the list please forward that information with your spore donation or request.

Listed below are the donors and their respective donor numbers from 1991-1994. Some may have been lost during the transition of the exchange. I apologize in advance if anyone is overlooked. The ones with an asterisk deserve

special recognition for turning in many different kinds of spores in very good condition.

It is urgently requested that donors send in fresh spore every year. The life of the Exchange depends on your contributions of spores collected from many different localities from around the world. If time allows please mark each donation with pertinent information regarding the fern, that the spore was collected from.

To Order: Please print your selections clearly in alphabetical order using Botanical name. Include 25 cents for each fern requested (check payable to the Hardy Fern Foundation) and a self-addressed stamped envelope. No charge for requests from overseas, but please enclose an International Postal Response Coupon to help with the return of the spores. Maximum order is 25 packets per year.

Mail Requests To:

Wayne D. Baxter
307 Riverdale Cir.
Stephenson Va., 22656, USA

FIRST	LAST	DN#	FIRST	LAST	DN#	FIRST	LAST	DN#
Brian	Aikins*	1	Dr. T. W.	Turney*	53	Bryan J.	Laughland	105
Wayne	Baxter	3	Dr. Cor	Van de	54	Barry	White*	106
Wendy	Born*	4	Mrs.	Vanderma	55	Beverly	Edney	107
Mrs Alice	Burkman	5	Suzette	Visentini	56	Catherine	Guiles	108
Anna	Davis	6	Les	Vulcz	57	Phyllis P.	Bates	109
Sylvia	Duryee	7	Bruce	Wakeman	58	Bob and	Halley*	110
Leslie	Duthie	8	Elmo	Weeks	59		HFF	111
Patrick	Dwyer	9	Reginald	Kaye	60		AFS/NYBG	112
Patrick	Dwyer*	9	John	Adkins	62	Naud	Burnett	113
Sue*	Entz	10	Don	Agostini	63	J. C.	Punter*	114
Iris	Gaddis*	11	Diane	Atterbury	64	Gretchen	Gould	115
Wolfram	Gassner*	12	Roger	Boyles	65	Rufina	Osorio	116
Chris	Goudy	13	Dorothy	Byer	66	Dr. Donald	Farrar	117
Eldred	Green	14	Edmund	Cava	67	Chanin	Thorut	118
Greg	Haines	15	Eileen	Clause	68	Elva C.	Link	119
Neil	Hall	16	Michael	Concannon	69	Dr Alf	Birkren	120
Marguerite	Hankerson	17	Lothar	Denkewitz	70	Mrs Hiroko	Basashi	122
Kenneth	Hanover*	18	Don	Drife	71	Betsy	Feuerste	123
Leslie	Hatfield	19	Joachim	Ehlers	72	Michael	Garrett	124
Jocelyn	Horder*	20	John	Game	73		HFF	125
JR	Horrocks	21	Robert	Gamlin	74	Jason	Ney	126
Barbara	Hoshizaki	22	Johan	Kluge	75	TBD	Evers	127
Guy	Huntley	23	Jean	Graber	76	James A.	Rollins	128
Clive	Jerry	24	Laura	Gustin	77	MICHAEL	HEIM	129
Judith	Jones*	25	Edward	Hallman	78	Robert	Muller	131
Harold Dr.	Kasper	26	David	Hughes	80	Bandra	Constant	134
Dr. Irving	Knoblock	27	Yoshio	Kato	81	Wim	Favernier	135
Maren	Krukeberg	28	Shuzo	Kawabata	82	D.J.	Batten	136
Robert W.	Lake	29	John	Knouse	83	Cynthia	Farden *	138
Donald	Leake	30	Halyna	Kuheana	84	Jack	Bchieber	139
Stuart	Lindsay	31	Dorothy	Lamb	85	Alan	Smith	140
Lynn	Makela	32	Dr. David	Lellings	86	Virginia	Otto	141
John &	Mascitel	33	John &	Marley*	87	Jesse	Perry	142
Dr John	Mickel	34	Hiroki	Miyazaki	88	Wally	Reed Jr	143
Mary	Muller	35	Pamela	Moscetti	89	Jean	Lundberg	144
Bue	Olsen*	36	Craig	Sauls	90	Sue	Mandevil	146
Barbara S.	Parris	37	Dr.	Sheffield	91	Mary Ellen	Fonsing	148
Karola M.	Pettkus	38	Frank Mrs	Skula	93			
Ken	Pfeiffer	39	Val	Sontner*	94			
John &	Putnam	40	Dr. David	Straney	95			
Martin	Rickard	41	Judith	Sullivan	96			
Jim	Rugh	42	John	Thompson	97			
Prof.	Saiki	43	Christian	Wingard	98			
Kevin W.	Sanfers	44	Dr Bruce	Young	99			
PhDr.	Seibert*	45	Marge	Baird	100			
John &	Sjo	46	Margaret	Nimmo-Sm	101			
William	Thomson	49	S. MD	Hirsch	102			
Fred &	Timm	50	Richard	Pilliar	103			
Samuel	Tumey	52	Prof.	Lyon	104			

HFF	GENUS	SPECIES	CVR	COM. NAME	PK	Z	SZE	GRO	COLL.SITE	ORIG	DONOR
1	Adiantum	aleuticum		Maidenhair Fem.	50	4	12			Pacific NW,	
2	Adiantum	aleuticum	serpentine ecotype	Aleutian, westrn maidenhair	10	4	12		cascade mts	alaska,nw usa	92/25
3	Adiantum	aleuticum	subpumilum	Aleutian, westrn maidenhair	30	4	12			NW N hem	94/20.93/18.100
4	Adiantum	capillus-veneris		Venus hair fem	11	8	24	ASN		pantrop	94/9
5	Adiantum	diaphanum		Filmy Maidenhair	8	8	10	WSHZ		Aust NZd. Fll	94/9 93/9 92/9
6	Adiantum	pedatum		Amer. maidenhair	70	4	20	NSZ		E usa	94/18
7	Adiantum	venustum			20	5				tibet	93/7
8	Adiantum 1	Pedatum	Subpumilum	Maidenhair Fem	10	3		NSZ			
9	Allotodia	Australis			20	7		BSW	Mt Garret, Tasmania	Tasmania	
10	Arachniodes	aristata	vanegata	Prickly shield fem	1	8	36	SD		e asia, aust	93/10
11	Arachniodes	cavalerii			30	6				Japan	92/36
12	Arachniodes 2	simplicior	vanegata		5	7	30	SNE		far east	94/145
13	Arachniodes 2 4	Adiantiformis			8	8					94/9
14	Aspidotis	densa		Indians dream	30	4	8	DU	Wa.Eagl creek	w. usa	93/7.97
15	Asplenium	adiantum-nigrum		black spleenwort	90	6	18	RAN	Hawaii,Switz	Eur	94/9
16	Asplenium	adulterinum			14	7				Eur	94/9 12.92/45
17	Asplenium	billotii			20	6	10			Eur	94/9
18	Asplenium	bulbiferum		Mother spleenwort	9	6	36	N		Aus,NZ	94/9 141
19	Asplenium	ceterach		Rusty back fem	17	6	8	D		Eur,india Af	94/9 92/9
20	Asplenium	dimorphum		Three-in-one fem	4	8	30	N		Norfolk Is	94/9
21	Asplenium	fontanum		Smooth Rock Spleenwt	28	7	5	ANR		Europe	94/9 93/45
22	Asplenium	forisiense			10	8				Eur	94/9
23	Asplenium	incisum	Moule		20	7	10	ZR		NE asia	93/45 100
24	Asplenium	marinum		Sea spleenwort	28	8	5	Q		Eur	94/9
25	Asplenium	nidus		Bird's Nest Fem	60	8	60	HNT		N.Guina,lap,ryukyu ls.	94/11.9 93/9.43
26	Asplenium	obliquum		Shining spleenwort	5	8	48			NZ	92/116
27	Asplenium	oblongatum	see A. Lucidum		30	8	48			Nz	94/11
28	Asplenium	onoptens			35	6				Eur	94/9 92/9
29	Asplenium	platyneuron		Ebony spleenwort	50	4	18	DZ	N Va NJ Me	E USA	94/9.147
30	Asplenium	pseudofontanum			3	6				Eur	93/45
31	Asplenium	rhizophyllum		Walking fem	8	4	6	ANT		E USA	94/9
32	Asplenium	ruta-murana		Wall-rue	90	4	6	QA	Wales,Eng,Switz	N Hem	94/9 36
33	Asplenium	trichomanes		Maidenhair spleenwort	50	5	14	ANT	Me	Cosmo	94/9 93/7.8.9.97
34	Asplenium	trichomanes	Cristatum	Maidenhair spleenwort	1	5	14	ANT			93/7.36.45
35	Asplenium	trichomanes	Incisum	Maidenhair spleenwort	20	5	14	ANT			94/36 93/45
36	Asplenium	trichomanes	quadivalens	Maidenhair spleenwort	10	5	14	ANT	Switz	Eur	93/45 92/45
37	Asplenium	trichomanes	trichomanes	Maidenhair spleenwort	8	5	14	ANT	Switz	Eur	
38	Asplenium	viride		Green spleenwort	20	4	5	ARN		Alask N Hem	94/9 93/9 92/9
39	Asplenium 1	septentnonale		Forked spleenwort	70	5		ZDT	Switz	Eur	94/9
40	Asplenium 1	x ebenoides		Scotts spleenwort	20	5	18	ANR		E USA	94/1.93/97
41	Athyrium	alpestre		Alpine lady fem	10	4	20	RS		NW N.AM	94/9 93/97
42	Athyrium	angustum	rubellum	Nothem lady fem	5	3	48	ZNT		N Hem	94/141
43	Athyrium	asploenooides		Southern Lady Fern	40	5	48	ZS		SE USA	94/9 93/9 92/9
44	Athyrium	deltoidofrons			5	6	24			Jap,Ch.Kor	93/45 92/88
45	Athyrium	distentifolium		Alpine lady fem	9	3	24	RS	Germ,Austria 1800m	far N Hem	94/12 93/12
46	Athyrium	filix-femina		Lady Fem,	40	3	48	ZNT	N Va,SW Mich	N HEM	94/14493/3.126
47	Athyrium	filix-femina	Bornholmense	Lady fem	50	3	48	ZNT		NE N Hem	
48	Athyrium	filix-femina	cristatum	Lady fem	25	3	48	ZNT		N HEM	94/18 92/18.10
49	Athyrium	filix-femina	Cyclosorum	Northwestern lady	20	3	48	ZNT	Oreg	NW N Hem	93/97 92/9 26
50	Athyrium	filix-femina	Frizelliae	Lady fem	20	3	48	ZNT		N HEM	93/7.97
51	Athyrium	filix-femina	red stipes	Lady fem	15	3	48	ZNT	Hamburg,Germ	N HEM	93/12
52	Athyrium	filix-femina	rubellum	Red stemmed Lady Fem	50	3	48	ZNT	N Va,Me	N HEM	94/5 93/3
53	Athyrium	filix-femina	Sitchense	Lady fern	6	3	48	ZNT		N HEM	
54	Athyrium	filix-femina	Vernoniae cnsata	Lady fem	20	3	48	ZNT		N HEM	92/49.103.113
55	Athyrium	filix-femina	Victonae	Lady fem	3	3	48	ZNT		N HEM	94/141
56	Athyrium	niponicum			30	4	18	ZNT		far east	94/9 93/18
57	Athyrium	niponicum	Pictum	Japanese Painted Fem	60	4	18	ZNT	SW Mich	far east	94/18
58	Athyrium	niponicum x A f ff	appears fertile		30	5					
59	Athyrium	otophorum		Aunculate lady fem	60	4	24	S		far east	93/3.10.100
60	Athyrium	otophorum	okanum	Aunculate lady fem	15	4	24	S		far east	93/9
61	Athyrium	pycnocarpon		American Glade Fem	20	4	48	ANT		N Am	94/52
62	Athyrium	thelypteroides		Silvery Glade Fem. Silvery	20	4	36	UNZS	Me	E N Hem	94/5 93/9 92/9
63	Athyrium	vidalii			20	8			Jap	Japan	92/9.88
64	Athyrium	yokoscense			4	4				Kunies, USSR	93/36.45 92/45
65	Athyrium 2	Filix-femina	multifidum	Lady fem	5	3	48	ZNT		N Hem	94/141
66	Athyrium 2	Filix-femina	multifidum Eng spore	Lady fem	5	3	48	ZNT		N Hem	94/141
67	Athyrium 2	Filix-femina	Rubripes	Red stemmed lady fem	8	3	60				94/148
68	Athyrium 3	Filix-femina	Minutissimum	Lady fem	2	3	48	ZNT		N HEM	94/148
69	Athyrium 3	Filix-femina	Plumosum	Lady fem	3	3	48	ZNT		N HEM	94/148
70	Blechnum	filiforme			30	8	18	CGESW	NZ	NZ	
71	Blechnum	fluvatile		Ray water fern	40	8	20	RSW	Tama v Vict Aus,NZ	aus, NZ	94/106 93/53
72	Blechnum	patersonii		strap water fern	30	8	28	SHW	Vict,Aus	Aus	94/106 93/53
73	Blechnum	penna-marina		alpine water fern, little hard	30	6	10	GTWR		NZ	93/9.38.97
74	Blechnum	penna-manna	Cnstatum	alpine water fern, little hard	15	6	10	GTWR		NZ	94/4
75	Blechnum	spicant		Ladder fem.	30	6	28	ZSEW		N. Hem Pac nw	94/9.36.93/97
76	Blechnum	spicant	large form, 3'	Ladder fem., deer fem	4	6	36	ZESW		N Hem	94/36 92/36
77	Blechnum	spicant	Rickard's serrate	rich seerate deer fem. ladder	20	6	24	ZESW		N Hem	93/36 97
78	Blechnum	vulcanicum		Wedge water fem	10	8	30	SW	NatPkNz,Tasm	Aus,NZ	93/53
79	Blechnum 2	spicant	Redwood giant	Giant ladder fem	15	4	30			N Calif	94/4
80	Botrychium	dissectum		Cut leafed Grapefem	1	4	8	QLZT	N Va	N Am	93/9
81	Botrychium	dissectum	obliquum	Grape fem	15	4	8	QLZT	N Va	N Am	93/120
82	Ceterach	dalhousiae		see asplen dalhousiae	2	8	6			N Am, N India	
83	Ceterach	officinarum		see asplen ceterach	2	5	6	A		India, Af, Eur	94/9
84	Cheilanthes	alabamensis		Alabama Lipfern	25	6					

HFF	GENUS	SPECIES	CVR	COM. NAME	PK	Z	SZE	GRO	COLL.SITE	ORIG	DONOR
92	Comoptens	crenulatoserulata			15	8	36	SN		Japan,	94/12 93/12
93	Cryptogramma	acrostichoides			90	6	12	ZUD	Ramona Fils, eagl crk	W US	94/1 92/97
94	Cryptogramma	cnspa		parsley fern	80	8			Norway	Eur W asia	94/9.12 93/9
95	Cyathea	australis		rough tree fern	40	8	120	BUZN	Melb Aus	Aus,NZ	94/106 93/87
96	Cyathea	Brentwood		lacy tree fern	15	8	200	B		Aus	93/87
97	Cyathea	brownii		norfolk is tree fern	60	8	200	BTN	NZ,Aus	Norfolk is	94/94
98	Cyathea	cooperi	blue form	lacy tree fern	15	8	200	BWS		Australia,NZ	93/87 92/87
99	Cyathea	cooperi	Brentwood	lacy tree fern	5	8	200	BWS		Australia	92/87
100	Cyathea	cunningham		slender tree fern	60	8	120	BN		Australia,NZ	92/55
101	Cyathea	metteniana	se gymnosphaera m		2	8		B	ryukyo	Japan	93/43
102	Cyathea	robertsiana			5	8	160	BUQ		Australia	92/87
103	Cyathea	smithii			20	8	200	BTN	Auckland	NZ	92/55
104	Cyathea	2	Tomentosum		20	8	72	BN	New guinea	NGuinea	94/94
105	Cyrtomium	falcatum		holly fern	50	6	20	RSN	Azores	Jap,China, Kor	94/24.9 93/1.9
106	Cyrtomium	falcatum	Rochfordianum	Japanese Holly Fern	40	6	20	RSN		Jap,China, Kor	93/36 92/7.97
107	Cyrtomium	falcatum	RochfordianumHardy form)	Japanese Holly Fem	2	6	20	RSN		Jap,China, Kor	93/36 92/7.97
108	Cyrtomium	fortunei			90	6	16	ZN	Wakayama,Jp.	Jap,China, Kor	94/9.12.82
109	Cyrtomium	fortunei	intermedium		40	6	16	ZN		Jap,China, Kor	93/43 92/113
110	Cyrtomium	macrophyllum		big leafed holly fm	30	6	16	ZSN	Wakayama,Jp	Jp,CH,Kr,India	94/82
111	Cystopteris	bulbifera		Bladder Fern	2	3	28	ANT	Minn	N A.	93/9.97 92/9.97
112	Cystopteris	dickieana		bladder fern	25	7	12	NT		Eur	94/12 93/38
113	Cystopteris	fragilis		Brittle Bladder frn, fragile fern	90	4	12	ZNT	Germ,eagle crk	Cosmopolitan	94/9.12
114	Cystopteris	fragilis	much divided type	Brittle Bladder Fern, fragile	15	4	12	ZNT	Germ Alps 1300 m	Eur	93/12
115	Davallia	pyxidata		australian hare-foot fn	2	8	30	R		Aus	94/9
116	Davallia	species			4	8			Taiwan	taiwan	94/12
117	Davallia	2 4	Manesii	Hares foot fem	1	6	12	G		E Asia	94/9
118	Dennstaedtia	punctiloba		Havesented fem. Prefers dry	1	3	18	UNG	Blu Hll Me	N.A.	
119	Dennstaedtia	2	hirsuta		10	8			Wakayama,Jp	Jap.	94/82
120	Deparia	petersonii			20	8	22			Georgia	.
121	Dicksonia	SSS	antarctica	Soft Tree Fern	30	7	120	BU	Tasm,Aus	AustTasmania	94/25.106
122	Dicksonia	SSS	fibrosa		10	7	120	BEN	Nt Prk NZ,Aukind	New Zealand	94/25 92/105
123	Dicksonia	squarrosa		wheki	30	7	120	BTN	Auckland	New Zealand	92/55.105.114
124	Dicksonia	youngiae			25	8	120	BN		Aus	92/9.87.106.115
125	Diphasiastrum	234	Complanatum	Northern running pine	2	2	8			N NAm	94/9
126	Diplazium	pycnocarpion		narrow leafed glade fn	8	3	24			E. N.A.	93/9
127	Doodia	media		Common Rasp Fem	20	7	10	TW	E Aus	AusNZ Nrfolk Island	94/94 93/1.109
128	Doodia	media	australis	Common Rasp Fem	8	8	10	TW		New Zealand	94/1
129	Doodia	media	Caims	Common Rasp Fem	20	7	10	TW	E Aus	AusNZ Nrfolk Island	94/94 93/1.109
130	Doodia	2 4	Aspera	prickly rasp fem	11	6	15	UNG	SE Aus	Aus,NZ,Norf is	94/9.94
131	Dryopteris	affinis	affinis	scaly male fem. golden scaled	12	4	48	SN		Eur SWasia	94/9
132	Dryopteris	affinis	borren,Pseudodisjunta		20	4		SN	Switz		
133	Dryopteris	affinis	cambrensis	crisped golden scaled male	40	4	36	SN		Eur SWasia	92/45
134	Dryopteris	affinis	Crispa	crisped golden scaled male	4	4	48	SN		Eur SWasia	94/20
135	Dryopteris	affinis	Cnspa gracilis	cnsped dwarf golden scaled	4	4	16	SN		Eur SWasia	93/36
136	Dryopteris	affinis	Crispa stableri	scaly male fem. golden scaled	2	4	48	SN		Eur SWasia_Eng	93/36
137	Dryopteris	affinis	Cnstata "The King"	scaly male fem. golden scaled	20	4	48	SN	Victoria,Aus	Eur SWasia,Aus	93/100
138	Dryopteris	affinis	disjuncta	scaly male fem. golden scaled	30	4	48	SN		Eur SWasia	92/9.26.45
139	Dryopteris	affinis	Persica	scaly male fem. golden scaled	30	4	48	SN		Eur SWasia	92/26.45
140	Dryopteris	affinis	Polydactyla Dadds	dadds long finned golden scaled	5	4	48	SN		Eur SWasia	93/125
141	Dryopteris	affinis	pseudodisjuncta	scaly male fem. golden scaled	8	4	48	SN		Eur SWasia	92/9
142	Dryopteris	affinis	punctata	scaly male fem. golden scaled	4	4	48	SN		Eur SWasia	92/9.26
143	Dryopteris	affinis	robusta	scaly male fem. golden scaled	8	4	48	SN		Eur SWasia	93/100 92/9
144	Dryopteris	affinis	stillupensis	scaly male fem. golden scaled	10	4	48	SN		Eur SWasia	
145	Dryopteris	affinis	The King	scaly male fem. golden scaled	12	4	48	SN		Eur SWasia	94/141
146	Dryopteris	amurensis			15	6		SN		far east	
147	Dryopteris	amurensis?			8	8		SN			94/12
148	Dryopteris	arguta		marginal woodfern_coastal	20	8	18	DT		W. N.A.	93/97 92/36
149	Dryopteris	atrata		shaggy shield fem	30	6	18			N Hem	94/9.93/9
150	Dryopteris	austriaca	spinulosa	Spinulose Wood Fem	25	3	48			N. Hem	92/9
151	Dryopteris	blanfordii			30	3				N. Hem	94/12 93/9.12
152	Dryopteris	borren		see d. affinis	1	4	48			Eur SWasia	92/9
153	Dryopteris	cambrensis			10	6			CumbriaEng	Eng	92/24.26
154	Dryopteris	campyloptera		Mountain Wood Fem_easter	13	3	18	TN	mt greylock	NE N. Am	93/9.97 92/9
155	Dryopteris	carthusiana			20	3	30	TZN		Europe, N Am	94/9
156	Dryopteris	championii			25	6				far east	94/10 93/7
157	Dryopteris	chinensis			14	7				far east	94/9.93/38
158	Dryopteris	clintoniana		clintons woodfern	40	4	36	WS		E NA	92/26
159	Dryopteris	crassirhizoma			90	6			JapanFiji,mtNan.Jp	far east	93/9.34.45
160	Dryopteris	cristata		crested shield fem	60	3	36	ZWS	N.H. Mich	N. HEM	94/9.27
161	Dryopteris	cycadina		shaggy shield fem	60	6	36	N		N Hem	93/3.97
162	Dryopteris	cystolepidota			15	8				Jap	
163	Dryopteris	dickinsii			15	8				far east	94/12
164	Dryopteris	dickinsii Incisa			5	8				93/45	
165	Dryopteris	dilatata		Broad Buckler Fem	15	5	48	WT	Wales,Germ	EurAsiaNAmsAf Jp	94/12 93/97.12
166	Dryopteris	dilatata	Cnspa Whiteside	crisped broad buckler fem	2	5	36	WT		N Hem	92/113
167	Dryopteris	dilatata	Grandiceps	broad buckler fem	10	5	36	WT		N Hem	
168	Dryopteris	dilatata	Jimmy Dyce	broad buckler fem	47	5	12	WT		GBrit	94/36 93/36.7
169	Dryopteris	dilatata	Lepidota cristata	lacy crested broad buckler fem	15	5	24	WT		N Hem	92/25.97
170	Dryopteris	dilatata	Recurvata	broad buckler fem	10	5	36	WT		N Hem	93/25.113
171	Dryopteris	erythrosora		autumn fem	35	6	36	TN		China, Jap Kor	94/141.18.20
172	Dryopteris	erythrosora	Prolifica	prolific autumn fem	10	6	16	TN		China, Jap Kor	93/97
173	Dryopteris	erythrosora	white son form	autumn fem	5						

HFF	GENUS	SPECIES	CVR	COM. NAME	PK	Z	SZE	GRO	COLL.SITE	ORIG	DONOR	
183	Dryopteris	fructuosa			60	8				Taiwan	93/43 92/26 43	
184	Dryopteris	goldiana		Goldie's Fern	15	3	48	SN	Mich	N Am	94/141 36.39 14	
185	Dryopteris	hangchoensis			25	8				Japan	92/43	
186	Dryopteris	hondoensis			2	8				Jap	92/9	
187	Dryopteris	intermedia		Evergreen Wood Fem	10	3	24	ZSN		E N America	94/9.12 93/9	
188	Dryopteris	lacera			50	8			Wakayama, Jp.	far east	94/82 93/12.97	
189	Dryopteris	lepidota		sunset fm	10	7	20	ZN		N. India Ch Eur		
190	Dryopteris	ludoviciana		southern shield fern	30	6	46	ASW	NE NC	SE US	94/2.9 92/9	
191	Dryopteris	marginalis		Leather Wood Fem. Marginal	50	3	25	ESN	Pa,	NE N Am	94/9.141 142.5	
192	Dryopteris	oreades		mountain male fern	30	5	20		Elbrus Caucasus	Eur	94/12 92/9.26	
193	Dryopteris	pallida			25	8				Eurasia	93/12	
194	Dryopteris	pallida	pallida		10	8				Eurasia	92/26	
195	Dryopteris	pallida	raddeana		4	8				Eurasia		
196	Dryopteris	polyepis			29	8				Jap	94/18 93/43.97	
197	Dryopteris	pseudo-mas		see d affins	6	4	48				94/148 93/38	
198	Dryopteris	pseudo-mas	Cristata	see d affins	26	4	48				93/38	
199	Dryopteris	purpurella			5	8				Japan		
200	Dryopteris	pycnopterooides			50	8				Sikkim	93/38.97.100	
201	Dryopteris	remota			25	4	36			Eur	93/9.97 92/72	
202	Dryopteris	sieboldii			10	6		ZSN		far east	92/111	
203	Dryopteris	sieboldii	Incisum		3	6		ZSN		far east	93/10	
204	Dryopteris	sp	Japan		1	8				Japan	93/7	
205	Dryopteris	spinulosa	americana	Toothed wood fern	15	4	24	ZN	Deepik	N A	93/3.9.97	
206	Dryopteris	sublacera			20	7	20				93/25 92/41	
207	Dryopteris	submontana			10	6	7	AN	Huttnroff Camb Eng	Eur, N Af	92/24.45	
208	Dryopteris	tokyoensis			21	6	36	ZSR		Jap, Kor	94/141 93/97	
209	Dryopteris	uniformis			50	7	7	ZN	Jp	Easia	93/9.10.12.43	
210	Dryopteris	vana	setosa	see d. bissetiana	10	6	24	ZSN		Sasia, Philipin	92/111	
211	Dryopteris	wallichiana		wallich's wood fern	60	6	36	S		pantropic	93/97 92/111	
212	Dryopteris	x boottii		boots fem	10	4	30	WT	Wisc	NA	93/24	
213	Dryopteris	X complexa	complexa	hybrid robust male fm	5	4	36		Rum	Europe		
214	Dryopteris	X complexa	crtica	hybrid robust male fm	6	4	36		Germ	Europe		
215	Dryopteris	1	celsa	Log Fem	60	4	40	ZSW	NwarkNJ	E US	94/2.9	
216	Dryopteris	2	filix-mas	cristata martindale	Male fem	7	4	60	ZSN		N Hem	94/141
217	Dryopteris	2	filix-mas	lineans		17	4	60	ZSN		N Hem	94/12.141
218	Dryopteris	2	Filix-mas	Martindale	male fem	7	4	60	ZSN		N Hem	94/141
219	Dryopteris	2	filix-mas	polydactyla	Male fem	5	4	60	ZSN		N Hem	94/141
220	Dryopteris	2	filix-mas	sublineans	Male fem	11	4	60	ZSN		N Hem	94/141
221	Dryopteris	2	goldiana hyb. ?	x D. clintonia ?	Goldie's Fem	11	3	48	SN	CT	CT	94/39
222	Dryopteris	2	4	Borreii	Cristata		4	6	48		Eur, SWAsia	94/9
223	Dryopteris	2	4	Borreii	pinderi		9	6	48		Eur, SWAsia	94/9
224	Equisetum	5	telmateia			10	7	25	WU		NW N A.	94/9
225	Gymnocarpium	dryopteris		Oak Fem	70	4		RS	B.C.	N. hem	94/12.18	
226	Gymnocarpium	1	robertianum		limestone oak fern	40	4	16	ASGN		N. hem	94/9.12
227	Hypolepis	millefolia		dissected ground fern	8	7	30	S		NZ		
228	Lycopodium	dendroideum		pinkly tree club moss	2	2	4	QLZW		Nor N.A.	92/117	
229	Lycopodium	tristachyum		blue ground cedar	8	3	6	QLTN		N E N Am	93/9	
230	Lygodium	japonicum			20	6	72	CN		S&SE Asia, Aus	93/9 92/1,114	
231	Matteuccia	orientalis			40	5		EZN		far east		
232	Matteuccia	\$	struthiopteris		Ostrich Fern	60	2	60	ZWS		N Hem	93/9.120 92/9
233	Matteuccia	\$	struthiopteris	Pennsylvanica	Ostrich Fern	40	2	60	ZWS	Ma	E US	93/8
234	Nephrolepis	2	Obliterata	Kimberly Queens		20	7	36		NW Aus	Aus	94/94
235	Notholaena	sinuata	sinuata	cloak fem	30	7	24	QUDA		SwUs, C&S am	92/104	
236	Onoclea	\$	sensibilis	Sensitive Fem.	60	2	24	WUGZ	Va	Va, N Hem	94/9 92/9.25.48	
237	Oreopteris (Thelypteris)	limbosperma		mountain fern	10	4	40	ZSN	Scotland	Eur N.A.		
238	Osmunda	\$\$\$	claytoniana	Interrupted Fem	5	3	60	ZWS	Me	cosmo	94/138 93/9	
239	Osmunda	\$	regalis	royal fem	20	3	90	ZWS		cosmo	93/9 10.127	
240	Osmunda	\$	regalis	Cristata	crested royal fem	10	3	72	ZWS		cosmo	94/25.92/20.113
241	Osmunda	\$	regalis	purpureascens	purple stemmed royal fm	10	3	72	ZWS		cosmo	94/25 92/7
242	Osmunda	\$	Regalis	regalis	Royal fem	10	3	90	ZWS		cosmo	94/25
243	Osmunda	\$\$\$	regalis	regalis Purpurascens		10	3	90	ZWS		cosmo	94/25 92/25
244	Pellaea	andromedifolia		Coffee Fem	15	8	16	ZUD		Calif	93/97	
245	Pellaea	atropurpurea		Purple Cliffbrake	10	3	16	UADE	Mexico	C&N A.	94/140 93/8.120	
246	Pellaea	nitidula			15	8				Ch	92/104	
247	Pellaea	rotundifolia		button fem	10	8	8	DTZ		NZ	94/9.27 93/9	
248	Phegopteris	connectilis		beech fern	40	5	16	SN	Wisc, Scotland	N Hem	93/129	
249	Phegopteris	hexagonopteris		southern bech fern	3	5	20	SN		N A	93/136	
250	Phylitis	scolopendrum			50	4	24	ARNS	Ma	N Hem	94/9 93/9.10.97	
251	Phylitis	scolopendrum	Kayes Lacerate		4	4	24	ARN		N Hem		
252	Phylitis	scolopendrum	scolopendrum	Hart's-tongue Fem European	6	4	24	ARNS		N Hem	94/9	
253	Phylitis	scolopendrum	wild-Italy		6	4	24	ARNS		N Hem	94/9	
254	Phylitis	2	4	Angustifolia	Harts tongue fem	6	4	24	ARNS		N Hem	94/9
255	Phylitis	2	4	maginata	Harts tongue fem	5	4	24	ARNS		N Hem	94/9
256	Phylitis	2	4	undulata	Undulating Harts tongue fern	5	4	24	ARNS		N Hem	94/9
257	Pityrogramma	triangularis		goldback fem	5	7	16	TD		N A	93/97	
258	Polypodium	australe	Cristatum old form	southern polypody	25	6	18			Eur	92/41	
259	Polypodium	australe	Dentatum	southern polypody	5	6	18			Eur	92/41	
260	Polypodium	australe	Grandiceps Forster	southern polypody	4	6	18			Eur	92/41	
261	Polypodium	australe	omniacaeum oxford	southern polypody	5	6	18			England	92/41	
262	Polypodium	australe	Semilacerum	falcatum O'Kelly	5	6	18			England	92/41	
263	Polypodium	australe	Semilacerum	robustum	5	6	18			England	92/41	
264	Polypodium	cambicum	cambicum	welsh polypody	14	3	8	TN		sw Calif	94/9	
265	Polypodium	ellipticum			5	7	36			E asia	92/9	
266	Polypodium											

HFF	GENUS	SPECIES	CVR	COM. NAME	PK	Z	SZE	GRO	COLL.SITE	ORIG	DONOR	
					1	4	30	SN		N.Am		
274	Polystichum	acrostichoides	multifidum unusual	Hard Shield Fem	30	4	30	ASR		Eur, N India	94/9.36	
275	Polystichum	aculeatum		Hard Shield Fem	5	6		ASR		Eur, N India	93/45	
276	Polystichum	aculeatum	'Bomim'	Hard Shield Fem	20	6		ASR		Eur, N India		
277	Polystichum	aculeatum	Nrrw,split form	Hard Shield Fem	60	4	36	SN	Wisc, Mich	N. Hem	94/9.5	
278	Polystichum	braunii		braun's holly fm	22	7	18	R	N. Calif,SonomaC	California	94/4.1	
279	Polystichum	californicum		california polyodv. cal. holly	50	3	20	SW		W N Am	93/7 92/7	
280	Polystichum	imbricans		imbanc sword fem	30	7	20	TNL	Wa	W N Am	93/28.132	
281	Polystichum	lemonni		shasta fem	5	8				far east	93/43	
282	Polystichum	lepidocaulon		holy fem	30	4	18	ASW		N Hem	94/9 93/9.38	
283	Polystichum	lonchitis		makinoi's holly fem	20	5	24			CH, Jap	94/12	
284	Polystichum	makinoi		makinoi's holly fem	9	7	18			CH, Jap	94/36 93/36	
285	Polystichum	mayebarae		see p.lemmoni	4	7				W N Am	94/12 92/9	
286	Polystichum	mohriodes	Elegans	see p lemmoni	30	7				W N Am	93/12 92/12	
287	Polystichum	mohrioides		see p lemmoni	60	7	36	SN		W N Am,	94/12 93/38	
288	Polystichum	mutinum		Sword Fern	18	5	24			JpChNep Him	93/7.36.45	
289	Polystichum	neolobatum		long-eared holly fem	25	6	24	SZE	Jap	JpChKor	94/9	
290	Polystichum	polyblepharum		tassel fem	10	8	36			Aus		
291	Polystichum	proliferum		mother shield fem	10	8	36			Aus		
292	Polystichum	prolificum			2	7				JpChKor	92/9	
293	Polystichum	pseudomakinoi			30	5	24	S		JpChKor	94/36 93/9.97	
294	Polystichum	retroso-paleaceum			25	6				JpChKor	93/9 26	
295	Polystichum	rigens		Soft Shield Fem	99	6	40	TN	Fr,Switz,Cauc,Wales	Europe	94/9.12	
296	Polystichum	setiferum	acutilobum	Soft Shield Fem	5	6	40	TN		Europe	92/45	
297	Polystichum	setiferum	Congestum	Soft Shield Fem	15	6	40	TN		Europe	92/101	
298	Polystichum	setiferum	Cristata Bouchart	Soft Shield Fem	3	6	40	TN		Europe	93/97	
300	Polystichum	setiferum	Lineans type	Soft Shield Fem	6	6	40	TN		Europe		
301	Polystichum	setiferum	Perserratum	Soft Shield Fem	10	6	40	TN		Europe	92/101	
302	Polystichum	setiferum	Rotund cnsatum	crested Soft Shield Fem	10	6	40	TN		Europe	94/20	
303	Polystichum	squarrosum			20	7	12			Himalaya	94/36 93/97	
304	Polystichum	tripteron			25	8			Wakayama,Jp	far east	94/82	
305	Polystichum	tsus-simense			15	8	18	ZSN		Ch Jp Kor	94/27.18.106.93	
306	Polystichum	vestitum		pnckly shield fem	15	7	48	TS	TaupoNZ	AusNZ	93/9 92/55	
307	Polystichum	Xiphophyllum		sword leaf fern	20	7	20			Chin, Twaiwan		
308	Polystichum	andersonii		andersons holly fem	60	6	36	WSR	Mt	NW N Am	93/97	
309	Polystichum	dudleyi		dudley's holly fem	10	8	36	TN		Calif.	92/36	
310	Polystichum	setigerum		alaska sword fern	70	2	48			NW N. Am	94/12 92/7.9.26	
311	Polystichum	2	setiferum	dahlem	soft shield fem	8	6	40	TN		Eur	94/12
312	Polystichum	2 4	Setiferum	foliosum	soft shield fem	4	6	36	TN		Eur	94/9
313	Polystichum	2 4	setiferum	proliferum	Soft shield fem	3	6	40	TN		Eur	94/9
314	Polystichum	2 4	setiferum	proliferum wollastonii	soft shield fem	3	6	40	NT		Eur	94/9
315	Pseudodrynaria	coronans			5	8	72	JUN		TaiwCh India	92/43	
316	Ptens	cretica		cretan brake	40	8	24	THN	Wakay,Jp,NItaly	E Hem	94/82	
317	Ptens	cretica	Albo lineata	cretan brake	40	8	24	THN		E Hem	94/9 92/17	
318	Ptens	cretica	Rvertoniana	cretan brake	15	8	24	THN		E Hem	94/110	
319	Pteris	cretica	Wimsettii	cretan brake	9	8	24	THN		E Hem	94/9	
320	Ptens	multifida		spider brake	2	8	16			JapCh	93/9.109	
321	Pteris	2	Incompleta		4	8			Azores	Azores	94/24	
322	Pyrosia	lingua		tongue fn,Jap felt fem	9	8	10	DU		E&SE Asia	94/9.27	
323	Pyrosia	2 4	lingua	mitsude	tongue fn,Jap felt fem	9	8	10	DU		E&SE Asia	94/143
324	Rumohra	adiantiformis		Leatherleaf Fem	30	8	50	TN	argnt	pantropic	94/27 92/9	
325	Thelypteris	hexagonoptera		Broad Beech Fem	30	4	20	TZN	Va,Me	E N. Am	93/9.126 92/8	
326	Thelyptens	limbosperma		mountain fem	25	3	40	ZR		Eur,N.Am	94/9 93/9	
327	Thelyptens	nevadensis		nevada marsh fem	30	6	25			NW N Am	93/97	
328	Thelypteris	noveboracensis		New York Fem.	50	3	18	ZTNE	Va	N.Am	93/9.126 92/9	
329	Thelyptens	palustris		marsh fem	25	4	18	WZ		Eur,N.Am	93/9 92/3	
330	Thelyptens	palustris	palustris	marsh fem	15	4	18	WZGS	SuffkEng	Eur,N.Am	92/24	
331	Thelyptens	palustris	pubescens	marsh fem	10	4	18	WZGS		Eur,N.Am	92/9	
332	Thelyptens	phegoptens	see Phegoptens connectilis	Narrow beechfem	25	4	18	SNZ	IavaBeds Wa	Eur,N.Am	94/12 93/97	
333	Thelyptens	simulata		massachusetts fem	30	4	24	WZ		NE N. Am	93/9 92/9	
334	Thelyptens	torresiana		Manana Maiden Fem	20	8	40	AW	Ga	Georg.cosmo	93/128	
335	Thelyptens	2	Acuminatus		10	8			Wakayama,Jp.	Jap.	94/82	
336	Woodisia	ilvensis		Rusty Woodsia	8	4	6	ERTNZ		Easia N.AmEur	94/12	
337	Woodisia	obtusa		Blunt lobed Wood Fem	20	4		RTN		N. Am	94/9	
338	Woodisia	polystichoides			25	6	12	RZN		ChJap, Korea	94/9 93/45	
339	Woodisia	scopulina			25	3	10	NT	Chnook Ps Wa	NW N.Am	94/9 93/7.97	
340	Woodwardia	areolata		Dimorphic Chain Fem. Netted	4	6		ZWU		North Amerca	94/9	
341	Woodwardia	fimbriata		giant chain fem	40	8		TW	Ca	Calif	93/7.25.97.92/4	
342	Woodwardia	orientalis		ontental chain fem	5	8	70	TEW		E&S asia	94/143	
343	Woodwardia	radicans		european chain fem	10	6	48			Eurasia	94/9	

About the spore list.....Wayne is to be commended for all the information he has added to the list. Unfortunately at press time my computer in untimely fashion decided that it did not want to talk to Wayne's. Therefore there are some errors in the list that we would prefer to have corrected. However, it was deemed even more important to distribute the list with this newsletter so here it is. We'll try to work out the bugs!!!!



Ferns for American Gardens *continued from page 8*

fore also be changed to match. The well loved 'Crispum' becomes a very unfamiliar 'Crispa', 'Glomeratum' becomes 'Glomerata', 'Ramo-cristatum' becomes 'Ramosa Cristata' etc. etc. To my taste an unfortunate change - but I suppose botanical correctness must prevail!

The book is 'wrapped up' with a map of US hardiness zones (very useful to we Europeans too), Listing of ferns for various purposes in the garden, listing of fern societies (I am glad to see the BPS and HFF to the fore here!). Fern suppliers are also given (USA only), and it is all topped off with an excellent bibliography.

The body of this book listing ferns runs to around 400 types described. It is of a depth and scope which inevitably provokes comment and discussion and any slight divergences of opinion I might have with the author are very minor and should in no way be seen as a serious criticism of the excellent book. I have no hesitation in recommending it to all serious growers of hardy ferns. This book in some ways fills the void left by the now out of print Hardy Ferns by Reginald Kaye and it is appropriate that some of the ferns in the excellent collection built up by Reginald Kaye are illustrated here.

Martin Rickard - England

Martin and his wife Hazel are owners of Rickards Hardy Ferns Ltd. in Worcestershire. He is Vice President of The British Pteridological Society and until recently served for many years as editor of their publication Pteridologist.

Notice

If you are one of the few who have not renewed your membership (check the date on your mailing label) this will be your last newsletter. Take the time now to renew or use the adjacent membership form to give a gift membership. Your membership is tax deductible to the extent allowed by law.

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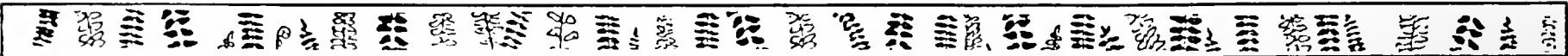
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Don't Confuse Sphagnum Moss with Peat Moss

The following information was published by Gerry Hood, President of the Canadian Sphagnum Peat Moss Association and distributed by the Los Angeles International Fern Society.

You may have read about a fungal disease called *Cutaneous Sporotrichosis*, a chronic infection identified by skin lesions. The fungus causing this disease has been found in several kinds of organic material. Because in extremely rare cases this disease can cause death gardeners are rightfully concerned about protecting themselves from contracting it. Some of the information circulating about how this disease is contracted has been inaccurate. It confuses two separate products; one known to carry the fungus and one which does not.

Sphagnum moss is one of the materials known to carry the sporotrichosis fungus. Most frequently used by the floral industry to line wire baskets, this product is frequently confused with sphagnum peat moss, a soil conditioner known for its ability to bind sandy soils, loosen clay soils and retain water. The difference is an important one. While there have been cases of sporotrichosis resulting from handling of sphagnum moss, I'm aware of no cases of sporotrichosis as a result of handling sphagnum peat moss. Sphagnum moss and sphagnum peat moss are *not* the same product.

Sphagnum moss is a living moss that grows upon a sphagnum bog. The fungus *Sporotrichum schenckii* is known to live in it.

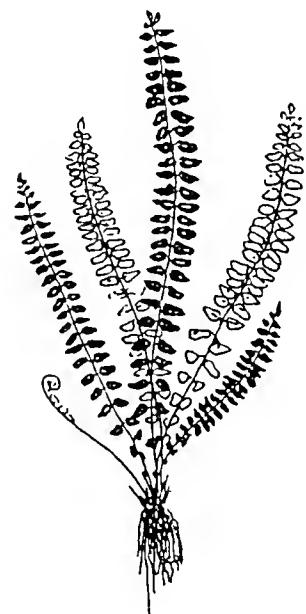
Sphagnum peat moss is the dead material that accumulates as new live material grows on top and exerts pressure on the moss below. The fungus is not known to live in the levels of a sphagnum bog where peat forms. Harvesters of horticultural peat moss remove the top few inches of the live sphagnum moss and only harvest the peat from the lower layers.

"Living" sphagnum moss is used in the floral industry to make wreaths and to line hanging baskets. Workers in that industry have been warned to protect themselves with gloves and heavy clothes and to avoid puncture wounds or scrapes. Gardeners wishing to use sphagnum moss to create their own baskets or for other uses should simply follow the same advice: wear gloves and long sleeves to prevent coming in contact with the dried moss. No similar warning appears on Material Safety Data Sheets (MSDS) for handling sphagnum peat moss.

Editor's note: This fungus enters one's system through cuts or scrapes.

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